WHAT IS CLAIMED IS:

1. A semiconductor light-emitting device having a DBR (Distributed Bragg Reflector) and a light-emitting layer formed on a GaAs substrate, the DBR being located between the GaAs substrate and the light-emitting layer, in which light directed from the light-emitting layer toward a top surface has a radiation angle dependence, the semiconductor light-emitting device further comprising:

a semiconductor layer having a number of layers of 1 or more is formed on the light-emitting layer, a top surface of the semiconductor layer being a roughened surface.

2. The semiconductor light-emitting device according to Claim 1, wherein the light-emitting layer to be formed on the GaAs substrate is a single layer or a plurality of layers made of $Al_yGa_zIn_{1-y-z}P$ ($0 \leq y \leq 1$, $0 \leq z \leq 1$).

3. The semiconductor light-emitting device according to Claim 1, wherein the semiconductor layer whose top surface is a roughened surface is made of $Al_xGa_{1-x}As$ ($0 \leq x \leq 1$).

4. The semiconductor light-emitting device according to Claim 3, wherein the semiconductor layer made of $Al_xGa_{1-x}As$ ($0 \leq x \leq 1$) is transparent to an emission wavelength.

5. The semiconductor light-emitting device according to Claim 3, wherein the semiconductor layer made of $Al_xGa_{1-x}As$ ($0 \leq x \leq 1$) has an Al mixed crystal ratio x of 0.5 - 0.8.

6. The semiconductor light-emitting device according to Claim 3, further comprising an $Al_yGa_zIn_{1-y-z}P$ ($0 \leq y \leq 1$, $0 \leq z \leq 1$) layer for diffusing a current injected from an electrode provided on a light takeout side, the $Al_yGa_zIn_{1-y-z}P$ layer being provided between the semiconductor layer made of $Al_xGa_{1-x}As$ ($0 \leq x \leq 1$) and the light-emitting layer.

7. The semiconductor light-emitting device according to Claim 1, wherein the layer whose top surface is a roughened surface is made of $Al_yGa_zIn_{1-y-z}P$ ($0 \leq y \leq 1$, $0 \leq z \leq 1$).

8. The semiconductor light-emitting device according to Claim 7, wherein the layer whose top surface is a roughened surface has a lattice constant different by 0.5% or more from that of the GaAs substrate.

9. A method for manufacturing a semiconductor light-emitting device having a DBR (Distributed Bragg Reflector) and a light-emitting layer formed on a GaAs substrate, the DBR being located between the GaAs substrate and the light-emitting layer, in which light directed from the light-emitting layer toward a top surface has a radiation angle dependence, the semiconductor light-emitting device manufacturing method comprising the steps of:

forming a semiconductor layer having a number of layers of 1 or more on the light-emitting layer; and thereafter roughing a wafer surface.

10. The method for manufacturing a semiconductor light-emitting device according to Claim 9, wherein the step of roughing the wafer surface includes a step of forming a pattern for scattering light onto the wafer surface by photolithography and etching.

11. The method for manufacturing a semiconductor light-emitting device according to Claim 9, wherein the step of roughing the wafer surface includes a step of abrasion the wafer surface.

12. The method for manufacturing a semiconductor light-emitting device according to Claim 9, wherein the step of forming the semiconductor layer having a number of layers of 1 or more on the light-emitting layer includes a step of forming a semiconductor layer including an $Al_yGa_zIn_{1-y-z}P$ ($0 \leq y \leq 1$, $0 \leq z \leq 1$) layer, and the step of roughing the wafer surface includes a step of boiling the wafer in hydrochloric acid.

13. A method for manufacturing a semiconductor light-emitting device having a DBR (Distributed Bragg Reflector) and a light-emitting layer formed on a GaAs substrate, the DBR being located between the GaAs substrate and the light-emitting layer, in which light directed from the light-emitting layer toward a top surface has a radiation angle dependence, the semiconductor light-emitting device manufacturing method comprising the steps of:

forming on the light-emitting layer a semiconductor layer having a number of layers of 1 or more including an $Al_yGa_zIn_{1-y-z}P$ ($0 \leq y \leq 1$, $0 \leq z \leq 1$) layer having a lattice constant different by 0.5% or more from the GaAs substrate, thereby roughing a wafer surface.

14. The method for manufacturing a semiconductor light-emitting device according to Claim 9, wherein the step of forming on the light-emitting layer a semiconductor layer having a number of layers of 1 or more includes a step of forming on the light-emitting layer a semiconductor layer including an $Al_yGa_zIn_{1-y-z}P$ ($0 \leq y \leq 1$, $0 \leq z \leq 1$) layer and an $Al_xGa_{1-x}As$ ($0 \leq x \leq 1$) layer, and the step of roughing the wafer surface includes a step of treating with dilute hydrofluoric acid or dilute nitric acid.